

# Interview with Lee Norbraten, director ISO 9000 Office

The JSC Quality System is now in operation and JSC Management would like all employees to be familiar with and understand what the Quality System and ISO 9000 are all about. Lee Norbraten, director of the ISO 9000 Office, answers some questions about the JSC Quality System:

**Q: What is ISO 9000?**

**A:** The International Standards Organization uses the ISO 9000 set of requirements to define how organizations promote higher quality in their products and services. More academically, ISO 9000 is standards and guidelines that define an effective quality system. An organization becomes registered after it proves to an external (third party) auditor that its management systems adhere to the requirements of ISO 9000.

**Q: What is the difference between ISO 9000 and ISO 9001?**

**A:** The International Standards Organization has many different series of standards which refer to different activities such as environmental systems (ISO 14000) or film speed (ISO 400). ISO 9000 is the series that refers to quality systems. ISO 9001 is the most detailed, comprehensive set of standards in the ISO 9000 series. JSC has always demanded world class leadership in the effective management of its programs and in the quality of the work it performs, providing value and inspiration to its constituents. The NASA administrator and the JSC director, recognizing the significance of the ISO 9001 standard, and wishing to maintain NASA's leadership role in quality, have required JSC to seek and obtain ISO 9001 registration.

**Q: Does ISO 9000 represent a higher standard?**

**A:** Previous NASA quality systems were based on the NASA Hand Book 5300 standard. ISO 9000 represents an improvement in that standard for several reasons. First, it makes quality the responsibility of the overall management and not just the quality department. Second, ISO 9000 establishes requirements only, leaving it up to the organization to establish procedures that best fit its operation. In other words, it describes the "what", but not the "how to." Third, ISO 9000 addresses total system quality and not just the goodness of the end product. Finally, ISO 9000 implementation at JSC will require an external certification process as proof that the standard has been met.

**Q: What is the center's mandate with respect to ISO?**

**A:** The Administrator has determined that, "All NASA centers are to be third party registered to ISO 9001." The center director has established November 1997 as the target date for the center to be registered under ISO 9001. JSC Director George Abbey has stated that JSC needs to be more effective with an ever decreasing budget. He sees ISO 9001 as being an agent to improve the center's effectiveness.

**Q: Why is the implementation schedule so aggressive?**


**A:** The experience of industry indicates that the implementation of an ISO quality system from scratch takes at least one year. JSC's one-year implementation target assumes that most of our work processes and documentation already are in reasonable compliance with ISO requirements. In addition, strawman center-level ISO procedures already were in

National Aeronautics and Space Administration

Lyndon B. Johnson Space Center

2101 NASA Road 1

Houston, Texas 77058-3696



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Reply to Attn of: AA/Director

QUALITY SYSTEM DECLARATION


Dear Fellow Employees:

The JSC Quality System is now in operation.

Our Quality System is based on the ISO 9001 standard for quality systems, and is documented in our Quality Manual and in 29 System Level Procedures. These documents all have been formally approved, and are available to all JSC employees on the ISO 9000 Homepage. By declaring the Quality System in operation, we are obligating ourselves to comply with these documents in carrying out our day-to-day functions. We intend to verify our compliance by means of a third party audit, currently planned for November of this year. NASA is the first federal agency to require ISO 9001 registration, and JSC is scheduled to be the first NASA field center to be registered.

I strongly endorse the management principles contained in the ISO 9001 standard. They embody the discipline that is essential for human space flight operations. Effective implementation of these principles will allow JSC to deliver more consistent quality for less cost in the products and services that we provide. This is a responsibility and a challenge that each of us must embrace.

Address all questions to your supervisor, your directorate or office ISO representative, or the ISO 9000 Office.



George W. S. Abbey

place following the Safety, Reliability and Quality Assurance and Engineering pilot project. Finally, it was felt that the more aggressive schedule would ensure strong and consistent attention to the details of ISO implementation.

**Q: What benefits will JSC gain from certification?**

Many companies seek ISO registration for economic reasons, customers demands, or a need for more disciplined internal processes. JSC also expects economic benefits through more effective use of the resources that are entrusted to us. Some of the benefits include:

- *Prevention of nonconformances*—measured by trends in the number of procedural discrepancies reported.
- *Early definition and stabilization of requirements*—measured by trends in the number of change requests submitted.
- *Uniformity in work processes*—measured by the reduction of documents representing similar work.
- *Improved risk assessment*—measured by trends in defined risk to programs.
- *Accountability*—measured by the improvement in the cumulative cost impact of individual nonconformances.

- *Customer involvement*—measured by customer satisfaction surveys.
- *Discipline*—measured by the level of compliance to established procedures and documentation.

**Q: What is the scope of certification?**

**A:** Because the ISO 9000 quality requirements expect an organization to apply common principles and procedures throughout, all JSC activities are expected to comply with the ISO standards. However, to achieve third party registration, the external review will focus only on products and services required for the core functions of human space flight: spacecraft engineering and design, flight crew training, space and life sciences research, program and project management, and mission operations.

**Q: What will be different under ISO 9000?**

**A:** Although most of our way of doing business will remain unchanged, there are a few areas where the ISO requirements are likely to effect change. There will be a single quality system for the center, and employees will be required to know how their work fits into the quality system. How we do our work will be documented, and safeguards will be put in place to ensure that we follow the current documents. More emphasis will be placed on assuring that only certified personnel can

perform critical work. Internal audits will be conducted to evaluate whether our systems comply with the ISO requirements. More emphasis will be placed on corrective action when problems occur. In general, ISO 9000 will require our management processes and the conduct of our work to be more disciplined, more focused and better documented.

**Q: Under ISO 9000, who is the customer?**

**A:** For the purposes of ISO 9001 registration, the "customer" must be external to the organization that is being certified. In the case of JSC, the primary external customer interface is with the NASA headquarters enterprises, particularly the Human Exploration and Development of Space enterprise associate administrator. Secondary external customers would include representatives of scientific and educational communities, industrial enterprises, and international partnerships that directly receive and utilize our products and services.

Virtually all work performed at JSC also involves relationships and agreements among organizations within the center. These "internal customer" relationships establish how work gets done at JSC, and are addressed by the various System Level Procedures and Common Work Instructions which are a part of the overall quality system. The ability to satisfy the needs of these "internal customers" will be a major factor in assessing the overall quality.

**Q: Are contractors part of certification?**

**A:** JSC is certifying the core business of the center. To the extent that contractor employees are accomplishing the core business objectives under direct civil service leadership, or are using JSC-defined procedures, they are within the scope of the JSC certification. Other work activities are outside the scope of JSC certification. However, there may be a requirement in the contract that such a vendor be independently ISO 9000 certified.

**Q: What about work performed at other centers?**

**A:** The scope of the Space Shuttle Program, the International Space Station Program, the Space Operations Directorate, and other JSC programs and projects extends to other NASA centers. This work will be considered outside the scope of the JSC registration. However, individual JSC programs and projects may establish agreements with other centers relative to ISO 9000.

**Q: What advice do you have for successfully achieving ISO 9000 implementation?**

**A:** We have to promote the reality that all the personnel involved become active advocates of ISO 9000 and not just participants in the process. ISO 9000 requires more than just going through the motions to get registered. On the surface it involves writing down the procedures for accomplishing our work and agreeing to perform our work according to those procedures. From a broader perspective, it provides the tools to find and use commonalities in similar procedures and a method of improving work procedures in a controlled manner.

**Q: What other cultural changes can we expect?**

**A:** One cultural change will be the development and use of a Corrective Action System that does more than track problems and their resolution. ISO 9000 promotes a focus on problem prevention over "fire fighting." The key to the Corrective Action System will be to identify the root cause of problems to prevent recurrence.

ISO 9001 Elements	
4.1	Management Responsibility
4.2	Quality System
4.3	Customer Agreement
4.4	Design Control
4.5	Document and Data Control
4.6	Purchasing
4.7	Control of Customer Supplied Product
4.8	Product Identification and Traceability
4.9	Process Control
4.10	Inspection and Testing
4.11	Control of Inspection, Measuring, and Test Equipment
4.12	Inspection and Test Status
4.13	Control of Nonconforming Product
4.14	Corrective and Preventive Action
4.15	Handling, Storage, Packaging, Preservation, and Delivery
4.16	Control of Quality Records
4.17	Internal Quality Audits
4.18	Training
4.19	Servicing
4.20	Statistical Techniques

Quality System Personal Checklist	
Know the answers to these questions:	
1.	What is the JSC Quality Policy?
2.	What does this policy mean to you?
3.	How do you implement this policy in your job?
4.	What is the hierarchy of the JSC document system?
5.	What procedures/work instructions do you use to do your job?
6.	How do you know that you are using the correct version?
7.	Who is your document custodian?
8.	Where can you find a copy of the JSC Quality Manual?
9.	Have you removed uncontrolled procedures and work instructions from the shelves, walls, computers, machines, etc.?
10.	Do you know the qualification requirements to perform your job?
11.	Do you know where your training records are kept?
12.	Are all training certifications up to date?
If you do not know the answers, see your directorate ISO 9000 representative.	

Directorate Representatives	
AH	Glen Van Zandt.....483-3069
AI	Jean E. Carter.....483-7556
BA	R. Gene Easley.....483-4077
CA	Larry A. Bowden .....244-9103
DA	Gary M. Kane .....244-5192
EA	Lewis O. Casey.....483-2015
GA	William A. Larsen .....483-4062
JA	Vincent L. Johnson .....483-7986
MA	Carl B. Shelley .....483-4095
NA	Larry C. Shaw .....483-2173
OA	Bruce Luna .....244-8972
SA	J. Britton Walters .....483-7334
TA	William L. Davidson .....483-7702
XA	Charles D. Mendel.....483-1286
YA	Lydia L. Gavin.....483-8007
Other key ISO phone numbers	
Audit Manager	Nick Lance.....483-3677
Implementation	Brent Fontenot.....483-6456
Assessment	Al Conde.....483-3644
Chief of Staff	Leon Blum .....483-3681
Also, visit the JSC ISO Homepage	
<a href="http://www4.jsc.nasa.gov/ISO9000">http://www4.jsc.nasa.gov/ISO9000</a>	